

CLAIMS

1. A handheld personal assistant comprising:
a voice-recognizer configured to transform an expression from a
5 person into a different mode of information; and
a natural-language processor configured to process the mode of
information to extract, from a database, a piece of information that is personal
to the person,
wherein the processor can still extract the piece of information when
10 the person declares the expression differently.

2. A handheld personal assistant as recited in claim 1, wherein the
processor analyzes the expression grammatically and semantically to
transform at least a part of the expression into at least one instruction.
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3. A handheld personal assistant as recited in claim 2, wherein based on
the person's voice, the personal assistant only allows the person to access
the piece of information that is personal to the person.
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4. A handheld personal assistant as recited in claim 2,
wherein the processor can still extract the piece of information even if
the expression is ambiguous, and
wherein the recognizer has been previously trained to recognize the
person's voice, but not another person's voice.
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5. A handheld personal assistant as recited in claim 3, wherein the piece
of information is selected from a list consisting of a personal address book, a
to-do-list and a calendar.
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6. A handheld personal assistant as recited in claim 5,
wherein the expression can be one or more words; and
wherein the piece of information depends on the context under which
the person made the expression.

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7. A handheld personal assistant as recited in claim 5, wherein said personal assistant further includes a display to display the piece of information.

5 8. A handheld personal assistant as recited in claim 5, wherein said personal assistant further includes a voice synthesizer that transforms the piece of information into sound to communicate to the person.

9. A handheld personal assistant as recited in claim 5,
10 wherein the piece of information was entered into the assistant by the user, and
wherein the personal assistant further includes a categorizer that stores the piece of information into the database.

15 10. A handheld personal assistant as recited in claim 9, wherein the piece of information was entered through voice.

11. A handheld personal assistant as recited in claim 9, wherein the person identifies a category to help the categorizer store the piece of information into the database.

20 12. A handheld personal assistant as recited in claim 5, wherein if the assistant cannot resolve an ambiguity in the expression, the personal assistant provides the person with a number of alternatives to resolve the ambiguity.

13. A handheld personal assistant as recited in claim 5, wherein based on the person's voice, the personal assistant only allows the person to access the piece of information that is personal to the person.

30 14. A handheld personal assistant as recited in claim 1,
wherein the expression can be one or more words; and
wherein the piece of information depends on the context under which the person made the expression.

15. A handheld personal assistant comprising:
a voice-recognizer configured to transform an expression from a person into a text string; and
5 a natural-language processor configured to process the text string to understand the text string and initiate an appropriate action,
wherein the appropriate action is dependent on a context associated with the expression.
- 10 16. A handheld personal assistant as recited in claim 15, wherein the content is inferred from the expression by the natural-language processor.
- 15 17. A handheld personal assistant as recited in claim 15, wherein the piece of information is selected from a list consisting of a personal address book, a to-do-list and a calendar.
- 20 18. A handheld personal assistant as recited in claim 15, wherein the processor can extract, from a database, a piece of information that is personal to the person, and cause the piece of information to be presented to the person as the appropriate response.
19. A handheld personal assistant as recited in claim 18, wherein the processor can still extract the piece of information when the person declares the expression differently.
- 25 20. A handheld personal assistant as recited in claim 18, wherein said personal assistant further includes a display to display the piece of information.
- 30 21. A handheld personal assistant as recited in claim 15, wherein the processor analyzes the expression grammatically and semantically to transform at least a part of the expression into at least one instruction.

22. A handheld personal assistant as recited in claim 15, wherein based on the person's voice, the personal assistant only allows the person to access the piece of information that is personal to the person, and excludes others from accessing the information that is personal to the person.

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23. A handheld personal assistant as recited in claim 15, wherein the processor can still extract the piece of information even if the expression is ambiguous, and wherein the recognizer has been previously trained to recognize the

10 person's voice, but not another person's voice.

24. A handheld personal assistant comprising:
a receiver configured to receive an expression from a person; and
a transmitter configured to transmit the expression to a second system, which is configured to transform the expression into a different mode of information;
process the mode of information to extract, from a database, a piece of information that is personal to the person; and
transmit the piece of information back to the handheld personal assistant;
20 wherein the handheld personal assistant and the second system are connected wirelessly.

25. A handheld personal assistant as recited in claim 24, wherein the second system can still extract the piece of information when the person declares the expression differently.

26. A method for obtaining information for a requestor interacting with a handheld computing device, said method comprising:
30 receiving an input voice expression;
converting the input voice expression into a text string;
processing the text string using grammatical and semantic processing to determine a natural language meaning for the text string; and
performing an action based on the natural language meaning.

27. A method as recited in claim 26, wherein said performing comprises:
retrieving information responsive to the natural language meaning of
the text string.

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28. A method as recited in claim 27, wherein said performing further
comprises:
presenting the retrieved information to the requestor.

10 29. A method as recited in claim 26, wherein said processing comprises:
determining a content associated with the input voice expression, and
wherein said performing operates to perform an action based on the
natural language meaning and the context.